

No.

9200171



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Northrup King Co.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (T. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'S28-01'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this 30th day of September in the year of our Lord one thousand nine hundred and ninety-four.

Attest:

Kenneth H. Eans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Ulie Esq
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

| | | | |
|---|---|--|--|
| 1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) Northrup King Co. | | 2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO. | 3. VARIETY NAME S28-01 |
| 4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP) P. O. Box 959 Minneapolis, MN 55440 | | 5. PHONE (include area code) 612-593-7333 | FOR OFFICIAL USE ONLY PVPO NUMBER 9200171 F I L I N G Date <u>Apr. 29, 1992</u> Time <input type="checkbox"/> A.M. <input type="checkbox"/> P.M. F E E S Filing and Examination Fee: \$ <u>2,150.00</u> Date <u>Apr. 29, 1992</u> R E C E I V E D Certificate Fee: \$ <u>250.00</u> Date <u>Sept. 13, 1994</u> |
| 6. GENUS AND SPECIES NAME Glycine max | 7. FAMILY NAME (Botanical) Leguminosae | | |
| 8. CROP KIND NAME (Common Name) Soybean | 9. DATE OF DETERMINATION September, 1989 | | |
| 10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Corporation | | | |
| 11. IF INCORPORATED, GIVE STATE OF INCORPORATION Delaware | | 12. DATE OF INCORPORATION 1976 | |
| 13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Robert W. Romig Northrup King Co. P. O. Box 959 Minneapolis, MN 55440 PHONE (include area code): 612-593-7305 | | | |

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)

a. ☒ Exhibit A, Origin and Breeding History of the Variety.

b. ☒ Exhibit B, Novelty Statement.

c. ☒ Exhibit C, Objective Description of Variety.

d. ☐ Exhibit D, Additional Description of Variety.

e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.

f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office _____

g. ☒ Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.)
☐ YES (If "YES," answer items 16 and 17 below) ☒ NO (If "NO," skip to item 18 below)

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ YES ☒ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.
☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act. Give date. _____)
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETING IN THE U.S. OR OTHER COUNTRIES?
☐ YES (If "YES," give names of countries and dates)
☒ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

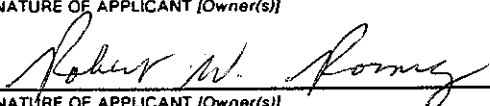
| | | |
|---|--|------------------------|
| SIGNATURE OF APPLICANT (Owner(s))  | CAPACITY OR TITLE Vice President Research | DATE April 27, 1992 |
| SIGNATURE OF APPLICANT (Owner(s)) | CAPACITY OR TITLE | DATE |

EXHIBIT A

9200171

Origin and Breeding History of the Variety

The soybean variety 'S28-01' is derived from a single plant selected from the variety S29-39. The progeny of this plant was grown in a plant row in 1988 and found to be earlier than the parent variety at maturity. This row was harvested individually and the seed increased in 1989. This seed was in turn used to produce Breeder Seed in 1990. The increase block was rogued carefully during flowering and at maturity. In all of these increases, the plants were uniform except for a few rare off-types that were assumed to have arisen from admixture or outcrossing. The line was tested as J828610 at several midwestern U.S. locations from 1989 to 1991 and found to yield well compared to other mid Maturity Group II cultivars. It was further tested as X9127 in 1991 and has subsequently been named S28-01. Descriptive traits including purple flowers, grey pubescence, yellow hilum, and brown pods have been identified and confirmed. S28-01 was tested in the field for iron-deficiency chlorosis at test sites in Northern Iowa and Southern Minnesota from 1989 to 1991 and found to be intermediate compared to varieties of known reaction. It has been tested for reaction to Races 1, 2, 3, 4, 7, and 19 of Phytophthora megasperma using hypocotyl inoculation of greenhouse grown plants and found to have the Rps 1-C gene for resistance

Foundation Seed of S28-01 was produced in 1991. The Iowa Crop Improvement Association inspected the fields and found them to meet the standards for Foundation Seed. The National Soybean Variety Review Board approved the variety for Certification on December 12, 1991.

S28-01 is a stable and uniform variety except for minor environmentally induced variation normally encountered in any soybean variety. In three years of testing and seed increase, no other variants have been observed. Any off-type plants which were removed from increase fields were assumed to have arisen from admixture or outcrossing.

Varietal purity will be maintained using progeny rows as needed.

EXHIBIT B

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Novelty Statement for the Variety

Soybean variety S28-01 is most similar to S29-39. It can be differentiated from S29-39 on the basis of maturity. In two years of testing in 13 environments, the average maturity date for S28-01 was 9/21 compared to 9/24 for S29-39 with an LSD of 1.

Maturity Dates for X9127 and S29-39

1991 Trials

| <u>Variety</u> | <u>Ave.</u> | <u>Cha.</u> | <u>Was.</u> | <u>Ott.</u> | <u>Gal.</u> | <u>Aub.</u> | <u>S.J.</u> |
|----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| S28-01 | 9/15 | 9/18 | 8/29 | 9/13 | 9/15 | 9/24 | 9/15 |
| S29-39 | 9/18 | 9/19 | 9/07 | 9/14 | 9/15 | 9/26 | 9/20 |
| LSD | 2 | 2 | 2 | 1 | 2 | 2 | 3 |

1990 Trials

| <u>Variety</u> | <u>Ave.</u> | <u>Cha.</u> | <u>Was.</u> | <u>Hud.</u> | <u>Day.</u> | <u>Aub.</u> | <u>S.J.</u> | <u>Ken.</u> |
|----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| S28-01 | 9/26 | 10/8 | 9/18 | 9/25 | 9/27 | 9/25 | 9/19 | 9/27 |
| S29-39 | 9/29 | 10/9 | 9/25 | 9/29 | 9/30 | 9/26 | 9/27 | 9/29 |
| LSD | 2 | 2 | 2 | 2 | 1 | 2 | 2 | 2 |

1989 Trials (not included in 13 trials referred to above)

| <u>Variety</u> | <u>Ave.</u> | <u>St. Joe.</u> | <u>Washin.</u> | <u>Dal.Cnt.</u> |
|----------------|-------------|-----------------|----------------|-----------------|
| S28-01 | 9/21 | 9/17 | 9/21 | 9/24 |
| S29-39 | 9/26 | 9/23 | 9/28 | 9/28 |
| LSD | 3 | 5 | 3 | 2 |

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July 25, 1994

To: Jeff Strachan, PVP Office, fax 310-504-5291

From: John Thorne

Subject: PVP Application for Soybean Variety, S28-01

I am sending the table from the combined analysis of 1990 and 1991 trials for S28-01 which will support the statement I made in Exhibit B regarding maturity. S28-01 (tested as J828610) matured September 21 vs. S29-39 on September 24 averaged over these 24 locations. The LSD was 1.

Please call if you have any further questions.

Sincerely,

John Thorne

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| NORTHUP KING CO. R&D / SOYBEAN REPORT ID SOVR800-20 | | | | | | | | | | | | | | | CDMBINED SUMMARY REPORT | | | | | | | | | | | | | | | DATE : 11-04-91 | | PAGE : 1 | | | | | | | | | | | | | | | | | |
|--|--------------------------|--|------|------|------|------|------|------|------|------|------|------|------|------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---|--|----------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| COMBINED 325 1990, 1991 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ***** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 120891325020013 WASHINGTON, IOWA POCAHONTAS, IOWA 120891325020112 GALESBURG, IL ST. JOSEPH, IL 160891326020262 CHATHAM, ONTARIO | | | | | | | | | | | | | | | 120891325020072 HUDSON, IOWA 120891325020132 AUBURN, IL 120891325021123 ST. JOSEPH IL MORGAN, MN 120890325020102 GALESBURG, ILLINOIS OTTAWA, ILLINOIS 120890325020212 WEST LIBERTY, OH. | | | | | | | | | | | | | | | 120891325020083 DAYTON, IOWA 120891325020172 ELWOOD, IND. 120890325020062 WASHINGTON, IOWA HUDSON, IOWA 120890325020173 ELWOOD, IN. 120890325020182 KENTLAND, IN. | | | | | | | | | | 120891325020102 OTTAWA, IL 120891325020212 WEST LIBERTY, OH. 120890325020072 DAYTON, IOWA 120890325020182 KENTLAND, IN. | | | | | | | | | |
| ***** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| VARIETY MEANS SORTED FROM HIGH TO LOW ON YIELD BU/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ***** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| REC NO. | VARIETY | | YLD | MRTY | HLDG | PLHT | PRR | IC | STR | SCN3 | BB | FD | GS | LC | FL/C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BU/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| J727006 | S42-30 X PRESTON PBI | | 48.5 | 9-23 | 2.7 | 99 | 1.5 | 2.2 | 1.8 | | 2.0 | 6-29 | 2.7 | 2.0 | 2.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2828610 | W410387 LINE 27 X9127 | | 48.5 | 9-21 | 2.0 | 76 | 3.0 | 3.5 | 1.8 | 4.1 | 2.0 | 6-29 | 4.3 | 2.0 | 2.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 000217 | JACK | | 48.4 | 9-25 | 3.1 | 101 | 1.4 | 2.8 | 1.8 | | 2.0 | 6-29 | 4.7 | 1.5 | 1.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| W713718 | A2943 X S23-12 BI | | 48.4 | 9-21 | 1.9 | 91 | 2.6 | 2.9 | 1.3 | | 2.0 | 6-30 | 2.5 | 2.0 | 2.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 000213 | S29-39 = X8930 = W410387 | | 48.3 | 9-24 | 2.2 | 81 | 2.2 | 3.4 | 1.7 | 4.2 | 2.0 | 6-30 | 4.9 | 2.0 | 2.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 000343 | P9303 | | 48.0 | 9-23 | 1.9 | 78 | 2.7 | 2.9 | 1.5 | | 2.7 | 6-28 | 4.0 | 2.0 | 2.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| J628201 | S23-12 X S42-30 BI | | 47.2 | 9-21 | 2.2 | 91 | 1.8 | 2.6 | 1.4 | | 2.0 | 6-28 | 2.0 | 2.0 | 2.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| J727018 | S42-30 X PRESTON BI | | 46.8 | 9-23 | 2.3 | 96 | 1.8 | 2.4 | 1.7 | | 2.0 | 7-1 | 3.1 | 2.0 | 2.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| M280514 | W114237 X S23-03 PBI | | 46.6 | 9-20 | 2.5 | 89 | 2.2 | 2.1 | 1.4 | | 3.0 | 7-1 | 2.7 | 1.8 | 2.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| J600382 | S30-31 X S39-99 BI | | 45.8 | 9-21 | 2.0 | 86 | 2.1 | 2.7 | 2.5 | | 2.0 | 7-3 | 4.2 | 2.0 | 2.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 000212 | S28-18 = X8928 = J405545 | | 44.5 | 9-19 | 2.0 | 81 | 1.7 | 3.2 | 2.1 | | 2.0 | 6-29 | 2.4 | 2.0 | 1.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 000380 | S30-41 (W306003) | | 44.4 | 9-21 | 1.8 | 88 | 1.5 | 2.9 | 1.7 | | 2.0 | 6-30 | 2.8 | 2.0 | 2.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| W611626 | OZZIE X A5474 X9125 | | 43.8 | 9-18 | 2.1 | 90 | 2.3 | 2.7 | 1.8 | 1.8 | 3.7 | 6-30 | 3.1 | 1.5 | 2.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 000227 | KENWOOD | | 43.8 | 9-17 | 2.4 | 85 | 2.8 | 2.7 | 1.8 | | 2.3 | 6-29 | 3.3 | 2.0 | 2.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ***** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GRAND MEAN TRIALS WITH DATA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| LSD | | | 24 | 13 | 19 | 6 | 2 | 2 | 3 | 2 | 1 | 2 | 3 | 2 | 6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CV (%) | | | 2.2 | 1 | 0.2 | | 1.2 | 1.1 | 0.8 | | 0.5 | 3 | 0.9 | 0.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F TEST VAR X LOG | | | 9.0 | 1 | 11.7 | | 20.0 | 17.1 | 23.7 | | 14.5 | 0 | 13.7 | 12.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F TEST VARIETY | | | ** | ** | ** | | ** | * | ** | | ** | ** | ** | * | * | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ***** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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U.S. DEPARTMENT OF AGRICULTURE
 AGRICULTURAL MARKETING SERVICE
 LIVESTOCK, MEAT, GRAIN & SEED DIVISION
 PLANT VARIETY PROTECTION OFFICE
 BELTSVILLE, MARYLAND 20705

EXHIBIT C
 (Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
 SOYBEAN (*Glycine max* L.)

| | | |
|---|---|---|
| NAME OF APPLICANT(S) Northrup King Co. | TEMPORARY DESIGNATION J828610, X9127 | VARIETY NAME S28-01 |
| ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) P. O. Box 959 Minneapolis, MN 55440 Attention R. W. Romig | | FOR OFFICIAL USE ONLY PVPO NUMBER 9200171 |

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,).

1. SEED SHAPE:



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
 3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)

2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
 4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

2. SEED COAT COLOR: (Mature Seed)

1 = Yellow 2 = Green 3 = Brown 4 = Black 5 = Other (Specify) _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 = Dull ('Corsoy 79'; 'Braxton') 2 = Shiny ('Nebsoy'; 'Gasoy 17')

4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

5. HILUM COLOR: (Mature Seed)

1 = Buff 2 = Yellow 3 = Brown 4 = Gray 5 = Imperfect Black 6 = Black 7 = Other (Specify) _____

6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow 2 = Green

7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low 2 = High

8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP1^a) 2 = Type B (SP1^b)

9. HYPOCOTYL COLOR:

1 = Green only ('Evans'; 'Davis') 2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')
 3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')
 4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

10. LEAFLET SHAPE:

1 = Lanceolate 2 = Oval 3 = Ovate 4 = Other (Specify) _____

11. LEAFLET SIZE:

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☒ 2 1 = Small ('Amsoy 71'; 'A5312')
3 = Large ('Crawford'; 'Tracy')

2 = Medium ('Corsoy 79'; 'Gasoy 17')

12. LEAF COLOR:

☒ 2 1 = Light Green ('Weber'; 'York')
3 = Dark Green ('Gnome'; 'Tracy')

2 = Medium Green ('Corsoy 79'; 'Braxton')

13. FLOWER COLOR:

☒ 2 1 = White 2 = Purple 3 = White with purple throat

14. POD COLOR:

☒ 2 1 = Tan 2 = Brown 3 = Black

15. PLANT PUBESCENCE COLOR:

☒ 1 1 = Gray 2 = Brown (Tawny)

16. PLANT TYPES:

☒ 2 1 = Slender ('Essex'; 'Amsoy 71') 2 = Intermediate ('Amcor'; 'Braxton')
3 = Bushy ('Gnome'; 'Govan')

17. PLANT HABIT:

☒ 3 1 = Determinate ('Gnome'; 'Braxton') 2 = Semi-Determinate ('Will')
3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

18. MATURITY GROUP:

☒ 5 1 = 000 2 = 00 3 = 0 4 = I 5 = II 6 = III 7 = IV 8 = V
9 = VI 10 = VII 11 = VIII 12 = IX 13 = X

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

BACTERIAL DISEASES:

☐ Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)

☐ Bacterial Blight (*Pseudomonas glycinea*)

☐ Wildfire (*Pseudomonas tabaci*)

FUNGAL DISEASES:

☒ 1 Brown Spot (*Septoria glycines*)

Frogeye Leaf Spot (*Cercospora sojina*)

☐ Race 1 ☐ Race 2 ☐ Race 3 ☐ Race 4 ☐ Race 5 ☐ Other (Specify) _____

☐ Target Spot (*Corynespora cassicola*)

☐ Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)

☒ Powdery Mildew (*Microsphaera diffusa*)

☒ 1 Brown Stem Rot (*Cephalosporium gregatum*)

☐ Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

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FUNGAL DISEASES: (Continued)

☒ 1 Pod and Stem Blight (*Diaporthe phaseolorum* var. *sojae*)

☒ 1 Purple Seed Stain (*Cercospora kikuchii*)

☐ Rhizoctonia Root Rot (*Rhizoctonia solani*)

Phytophthora Rot (*Phytophthora megasperma* var. *sojae*)

☒ 2 Race 1 ☒ 2 Race 2 ☒ 2 Race 3 ☒ 1 Race 4 ☐ Race 5 ☐ Race 6 ☒ 2 Race 7

☐ Race 8 ☒ 2 Race 9 ☐ Other (Specify) _____

VIRAL DISEASES:

☒ 1 Bud Blight (Tobacco Ringspot Virus)

☐ Yellow Mosaic (Bean Yellow Mosaic Virus)

☐ Cowpea Mosaic (Cowpea Chlorotic Virus)

☐ Pod Mottle (Bean Pod Mottle Virus)

☒ 1 Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

Soybean Cyst Nematode (*Heterodera glycines*)

☐ Race 1 ☐ Race 2 ☒ 1 Race 3 ☒ 1 Race 4 ☐ Other (Specify) _____

☐ Lance Nematode (*Hoplolaimus Colombus*)

☐ Southern Root Knot Nematode (*Meloidogyne incognita*)

☐ Northern Root Knot Nematode (*Meloidogyne Hapla*)

☐ Peanut Root Knot Nematode (*Meloidogyne arenaria*)

☐ Reniform Nematode (*Rotylenchulus reniformis*)

☐ OTHER DISEASE NOT ON FORM (Specify): _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

☒ 1 Iron Chlorosis on Calcareous Soil

☐ Other (Specify) _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

☐ Mexican Bean Beetle (*Epilachna varivestis*)

☐ Potato Leaf Hopper (*Empoasca fabae*)

☐ Other (Specify) _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

| CHARACTER | NAME OF VARIETY | CHARACTER | NAME OF VARIETY |
|-------------|-----------------|-----------------------|-----------------|
| Plant Shape | S29-39 | Seed Coat Luster | S29-39 |
| Leaf Shape | S29-39 | Seed Size | S29-39 |
| Leaf Color | S29-39 | Seed Shape | S29-39 |
| Leaf Size | S29-39 | Seedling Pigmentation | S29-39 |

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

| VARIETY | NO. OF DAYS MATURITY | PLANT LODGING SCORE | CM PLANT HEIGHT | LEAFLET SIZE | | SEED CONTENT | | SEED SIZE G/100 SEEDS | NO. SEEDS/POD |
|-----------------------------------|----------------------|---------------------|-----------------|--------------|-----------|--------------|-------|-----------------------|---------------|
| | | | | CM Width | CM Length | % Protein | % Oil | | |
| Submitted | 128 | 2.0 | 76 | 6.1 | 10.7 | 37.8 | 23.5 | 15.2 | 2-4 |
| S29-39 Name of Similar Variety | 131 | 2.2 | 81 | 6.1 | 10.6 | 38.0 | 23.5 | 16.5 | 2-4 |

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A₂ in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

EXHIBIT E**Statement of the Basis of Applicant's Ownership**

Soybean variety S28-01 was developed by the Northrup King Co. soybean breeding staff from germplasm sources cited in Exhibit B of this application. Northrup King Co. believes that the variety is novel as defined in the Plant Variety Protection Act and, therefore, that Northrup King Co. is the sole owner of the variety.